

Listing of Claims

1. ~ 6. (Canceled)

7. (Currently Amended) A multi-modal browser, comprising:

a plurality of modality-~~specific~~~~dependent~~ browsers, and

a multi-modal shell that parses and processes for parsing and processing a modality-independent representation of an application to generate modality-specific representations of the application which are rendered by corresponding modality-specific browsers to generate modality-specific views of the application, and to manage ~~managing~~ synchronization of I/O (input/output) events across each modality-specific view ~~generated by the plurality of modality-dependent browsers,~~

wherein each modality-~~specific~~~~dependent~~ browser comprises:

an API (application programming interface) that enables the multi-modal shell to control ~~for controlling~~ the browser and access ~~for managing~~ events; and

~~an external~~ wrapper interface that support synchronization between the modality-specific views by event filtering and exhchanging synchronization information between the multi-modal shell and the browser comprising synchronization protocols for supporting synchronization of the browser.

8. (Currently Amended) The multi-modal browser of claim 7, wherein the API for a modality-~~specific~~~~dependent~~ browser comprises a DOM (document object model) interface.

9. (Original) The multi-modal browser of claim 8, wherein the wrapper interface comprises methods for DOM event filtering.

10. (Original) The multi-modal browser of claim 7, wherein the multi-modal shell maintains and updates a dialog state of the application.

11. (Original) The multi-modal browser of claim 7, wherein the multi-modal browser comprises a fat client framework.

12. (Original) The multi-modal browser of claim 7, wherein the multi-modal browser comprises a distributed framework.

13. (Original) The multi-modal browser of claim 7, wherein the multi-modal shell comprises:

a model manager for maintaining a dialog state of the application;

a TAV (transformation/adaption/view preparation) manager for preparing and transforming pages or page snippets; and

a synchronization manager for managing event notifications to the browsers.

14. (Original) The multi-modal shell of claim 13, wherein the multi-modal shell comprises a distributed framework.

15. (Currently Amended) The multi-modal browser of claim 7, wherein the plurality of modality-specific dependent browsers comprise a WML (wireless markup language) browser and a VoiceXML browser.

16. (Original) The multi-modal browser of claim 15, further comprising an audio system for capturing and encoding speech data, and a plurality of speech engines for processing speech data.

17. (Currently Amended) A distributed WAP (wireless application protocol) multi-modal browser system, comprising:

a GUI (graphical user interface) browser that resides on a client device, wherein the GUI browser comprises ~~comprising~~ a DOM (document object model) interface for controlling the GUI browser and managing DOM and event notifications, and a wrapper interface for filtering events;

a speech application server comprising:

a voice browser, wherein the voice browser comprises a DOM interface for controlling the voice browser and managing DOM event notifications, and a wrapper interface for filtering events; and

an audio system for capturing and encoding speech data; and one or more speech engines for processing speech data; and

a multi-modal shell system for parsing and processing a modality-independent application and managing synchronization of I/O (input/output) events between the GUI and voice browsers.

18. (Currently Amended) The WAP multi-modal browser of claim 17, wherein the GUI browser comprises a WML (wireless markup language) browser and wherein the voice browser comprises a VoiceXML browser.

19. (Currently Amended) The WAP multi-modal browser of claim 17, wherein ~~the GUI browser resides on a local client device and~~ the speech application server is distributed over a network.

20. (Original) The WAP multi-modal browser of claim 19, further comprising a communication manager that employs protocols for transporting encoded voice data to the speech engines and protocols for enabling synchronization of the GUI browser.

21. (Original) The WAP multi-modal browser of claim 19, wherein the speech application server supports protocols for enabling remote control of the engines for server side speech processing.

22. (Currently Amended) The WAP multi-modal browser of claim 19, wherein the multi-modal shell system is distributed over the network.

23. (New) A multi-modal browser, comprising:

- a plurality of modality-dependent browsers, and
- a multi-modal shell for parsing and processing a modality-independent application and managing synchronization of I/O (input/output) events across each view generated by the plurality of modality-dependent browsers,

wherein each modality-dependent browser comprises:

- an API (application programming interface) for controlling the browser and for managing events; and
- an external wrapper interface comprising synchronization protocols for supporting synchronization of the browser, and

wherein the multi-modal shell comprises:

- a model manager for maintaining a dialog state of the application;
- a TAV (transformation/adaption/view preparation) manager for preparing and transforming pages or page snippets; and
- a synchronization manager for managing event notifications to the browsers.